GARDEN AND FOREST.

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Arbor Day.

DURING the past month we have received several reminders of the approach of Arbor Day in the way of circulars and pamphlets suggesting proper exercises for the ceremonial observance of that festival. They are generally issued by the State Superintendents of Public Schools, and contain a good deal of music and poetry, with selections in prose and verse suitable for recitation. Every effort to make this celebration an attractive one is praiseworthy, but in addition to the songs and orations we should like to see in these programmes greater effort to instruct the young people in some of the advantages and uses of trees, some of the fundamental facts relating to their growth and structure, and particularly some explicit directions as to planting them and caring for them afterward. Arbor Day is intended to encourage tree-planting. Its highest use is only reached when children, and their parents, too, are moved to plant the best trees in the best way. It requires no great amount of intelligence to thrust the roots of a tree into a hole in the ground; but to plant a tree as it should be planted—that is, to plant it so that it is likely to attain its best possible development and reach a green old age—is a work that requires care and skill. There are few things which men do where the difference between careless work and good work will show so plainly, or for so long a time, as in the planting of a tree. In the first place, the site for planting should be intelligently chosen, then the variety suited to the peculiar soil and situation and use for which it is intended should be considered. A good specimen of this particular tree should be selected and the ground should be thoroughly prepared to receive it. Even then, after the soil is properly firmed about its roots, the tree should not be neglected and suffered to fall a prey to insects or fungi, or allowed to starve for lack of food or water, or to be loosened by the wind.

One of the most instructive exercises of Arbor Day in every district where the day was celebrated last year, or in the years before, would be an examination by the children of the trees which had previously been set out, to see what proportion of them were thrifty and had made as good a growth as could have been expected. Professor Beal once related a very instructive incident in these pages. A few years ago each class and society of the Michigan Agricultural College planted a memorial tree with some ceremony. These trees were publicly accepted by the President, and the care of them was guaranteed. A year later reports were made which proved how much easier it is to plant a tree than it is to give it proper care afterward. Of the twelve trees not one had made satisfactory growth, none had been mulched, only one had received any cultivation, one was dead, two nearly dead, one had been cut down, and nearly all the rest of them were having a severe struggle with thin soil, grass, weeds, lack of moisture and insects and fungi.

It is a beautiful custom—this planting of memorial trees—but in order to make it impressive the trees must live to vigorous and venerable old age. A memorial tree of feeble growth and early decrepitude only serves to remind us that it was originally a bad specimen or that it had been badly planted or badly cared for. No excuse can ever be given for planting a tree carelessly or improperly. There may be particular reasons for planting trees closely together, as, for instance, where a rapid upward growth is desired, but for memorial trees ample room is needed. A melancholy example of improper planting in this regard is furnished by the so-called Hamilton trees on Washington Heights, in this city, about which there is so much sentimental discussion in the papers just now. These are thirteen Liquid-ambar-trees, said to have been planted by Alexander Hamilton to commemorate the original states of the Union. In *Harper's Young People*, last week, there is a good illustration of these trees, and it will be seen that they form a dense clump, standing within an area not more than fifteen feet square, where they could not possibly make a healthy growth. Old as they are, several of these trees are so choked and crowded that their trunks are scarcely eight inches in diameter, although the largest ones are two feet in diameter. None of them, however, has anything like a symmetrical development, and an examination of their tops shows much dead wood in all of them. If Alexander Hamilton or some one else had planted one tree in this spot where thirteen now stand, it would have cast a larger shadow than all of them together now do, and instead of being sickly and moribund it would now be giving promise of another century of vigorous life.

It is outside of our purpose to repeat here the elementary rules for planting trees and for protecting them. What we wish to insist on is that attention to the trees themselves is the matter of paramount importance, while talking and singing of them are of temporary and comparatively trivial moment. Even under the best auspices one day in a year devoted to trees will count for very little. The real advantage from the observance of Arbor Day comes where it is made a pleasing incident in a perennial and ever-growing interest in the study of natural objects. Some of the state horticultural societies have done very wisely in offering to furnish seed and plants under certain restrictions to district schools, in order to encourage the cultivation of flowers and shrubs on school-grounds. Others have offered to school-children prizes for collections of wild flowers and for classified lists of the birds and insects found in their districts. In an Arbor-day circular from Wisconsin we find directions for making and keeping a lawn, which is an admirable idea where the grounds are so large that the whole area is not required for a playground. The essential point is to encourage among school-children a personal interest in trees and shrubs, not simply for their use in making the school-grounds an attractive place, but for the development of habits of observation, which is of itself a liberal education. The habits of investigation which distinguish a man of science from his fellows are the very ones which are natural to young children, and which are too often repressed

in schools, where they should be encouraged. Just now, when all nature is quickened with new life and when the beauty and melody and fragrance of spring are appealing to our awakened senses, every child is eager to respond to the invitation from the woods and fields. The most fascinating objects for study abound by every wayside and in every thicket, and all the alert young faculties need is proper direction and encouragement.

A Japanese Garden.

THERE have been many allusions in recent comments on Japan to the picturesque gardens for which it is distinguished, but, however clear a description may be, it lacks something in definiteness, so that the illustration on page 175 will be of use in helping our readers to form an idea of one of the graceful and harmonious scenes that the Japanese delight in contemplating. In summer, when the sliding front of the house is rolled back, the master sits where he can look out upon his little domain, and the very decorations of his apartment are nicely calculated to harmonize with the character of his garden.

The picture gives us the situation of the buildings, and shows the enclosing stone wall, surmounted by a fence of plaster, with a battened coping of polished wood. Sometimes bamboo, interlaced in a pattern, is used for fences with very agreeable effect, and again hedges of Camellias are employed to enclose the grounds.

In the garden represented, the surface is naturally irregular, but the rising ground in the rear is made more effective by artificial mounds, which have been constructed to vary the slope. A miniature lake, encircled by greensward, and overarched by a light bridge of Bamboo-poles, is fed by a cascade from the hill, shaded by Willows. Groups of the red-flowering Azalea grow at its foot, with rushes and aquatic plants. Volcanic rocks with encrusted surfaces are here disposed to give wildness to the scene, and they are also placed elsewhere about the grounds, or on the borders of the sheet of water for ornament. Flat slate stones are also scattered about the greensward, to serve for paths, being found throughout Japan of convenient size and shape for stepping-stones, for which they are used everywhere.

Climbing the elevations we came to a thatched pavilion, from which there is an outlook upon the garden and upon the distant prospect. Near this, on the right, is a group of evergreens, and on the left we catch a glimpse of a little thicket of Bamboo, and the broad leaves of a Magnolia, the grassy slopes of the elevations being relieved by the smaller mounds, which lead like foot-hills to the turfed level below.

Here are groups of deciduous trees, and mingled clumps of Cypress and Cherry-trees in blossom, the white flowers showing in masses against the dark evergreens. Near the wall, in the foreground on the left, half-buried in bushes, is a windowed summer-house, with a high fence to insure privacy. This is hidden by an angle of the wall from an arbor with an arched entrance, near which stands one of the ornamental stone lamps with which the Japanese are fond of adorning their pleasure-grounds. A shrub in flower, probably the Hawthorn, grows beside the lamp, and also a few dwarf Cypresses. The tall evergreens upon the hill, and also those planted near the buildings as a shelter and screen, are Cryptomerias, the largest and most valuable cone-bearing trees of Japan.

Without the garden is a graveled court, from which a gate and flight of steps lead to the street, and in the corner of this court-yard are a Plum-tree in full bloom, and two Pine-trees, one of which is trained into a conventional form, apparently to overshadow the door in the garden-wall. Here we see the porch where the gate-keeper sits, which affords an entrance to a long low building communicating with the women's quarters, the larger of the two constructions being the dwelling of the master of the house.

There is in this little garden into which the cottages open an effect of harmony and repose. Proportion is well considered, and grace of line prevails, with agreeable masses of foliage where required. Though highly artificial, the tiny pleasure-ground is so simple and quiet, there is such a pleasant breadth about it that we gain an impression of space and dignity and suggestiveness that is often lacking in a far more spacious demesne. It gives a hint for a way of treating a large domain, where the miniature landscape might be reproduced on a more imposing scale with equal effectiveness, or it could be copied with advantage in a suburban villa of limited space, or used to form a surprise in some corner of a large estate.

In the Japanese book from which this illustration is drawn, are many other designs for the treatment of grounds of greater or less extent, which are full of interest, as showing the picturesqueness of the ideas of this artistic people when applied to landscape-gardening. No matter how small his enclosure, the gardener of Japan spares no pains to make his plot of land suggestive as well as beautiful. He will create in the sand of his back-yard a tiny Sierra, or fashion the gravel, by bridges and mounds, and carefully calculated strokings of the surface, into a suggestion of a lake or river. There is apparently no limit to his imagination, and like a child he enjoys his toy and invests it with whatever fancy pleases him. Thus through the mind he gains a larger outlook, and of a trifle makes a semblance of the universe, with that wise and gay philosophy which supplies material lacks by pleasures of the imagination. This cheerful gardener who, with fertile fancy, creates his own paradise, has discovered the secret of content,

> And having little, yet hath all.

In the eastern and northern states the danger from fire in woodlands is greater just at this time than at any other period of the year. The snow has melted; high winds have dried the surface of the ground, which is often covered with fallen leaves or with long dry grass and weeds, and the young growth of shrubs and other plants saturated with water has not yet appeared to resist the spread of fire. The conditions, therefore, are favorable for destructive conflagrations. This is the season, too, of rural spring cleaning; on every farm, on every country estate and villa lot, fires are kindled now to destroy leaves and brush, dead wood, and all the other refuse material that has accumulated during the year. It is usually a season of great atmospheric dryness and of high winds; bonfires carelessly lighted or carelessly tended escape control, reach meadows covered with dry grasses or woods strewn with dried leaves, and, soon getting beyond all control, spread to the forest and sweep on until their progress is stopped by a stream too broad to leap or until they are quenched by a rain-storm. Tens of thousands of acres of forest-land are burnt over every spring in the United States by fires started on farms; millions of dollars' worth of property is consumed, and many families are rendered homeless. During the month of April it is not an uncommon thing in some parts of the country to see the sun obscured for days together by the smoke of these fires, and every year at this time the columns of the daily journals are filled with accounts of the suffering and the losses caused by them.

It is necessary to build bonfires, although there are too many of them, and a great deal of good plant-food goes up in smoke in this country instead of being returned to the soil, but the management of such fires should be given to careful and responsible men; they should not be built when the wind is high or very near woods, or in long dry grass. The centre of a plowed field is the best place for a bonfire; it should never under any circumstances be left smoldering at night. This is a lesson we might have learned from the Indians, for an Indian never left a fire burning when he left his camp. The forest and the prairie meant too much to him, and he took no risks which might lead to their injury. His white successors are more indif-

ferent and more careless of personal safety and public prosperity. We have long held the view that there can be no protection for woodlands in thickly settled parts of the country until the community is sufficiently educated about the value of the forest to make possible the enforcement of a law under which town officials chosen for the purpose can have supervision and control over the manner and time of setting brush fires, and which should make it unlawful for any man to build a fire in the open air until he had obtained permission to do so.

It is evident that the value of the forest is better understood and more fully appreciated now than it was a few years ago, although perhaps this hardly appears yet in any perceptible diminution in the number of forest-fires. As a people, however, we are very far from that degree of intelligence and civilization which will permit interference with our action on our own land, and until that time comes the rural press cannot do the country better service than by preaching caution in the building and care of fires in the neighborhood of woodlands.

Notes of a Summer Journey in Europe.—XI.

FROM Copenhagen I went to Cassel by way of Hamburg, and short stops were made at both places.

In most of the German cities visited I was surprised to find the Elm so little used as a shade-tree, but in Hamburg the English Elm (Ulmus campestris) is quite commonly planted, and there are some fine avenues of it, forming beautiful gothic arches over a number of streets. Very uniform rows of the Linden (Tilia vulgaris) are also to be seen, all the trees being of about the same size, at equal distances apart, and in fine condition. The advantage of planting only one kind of tree in a single line is well shown here, and, altogether, the streets of this city are much better than the average in the matter of shade. Sometimes the foliage of the Lindens, Maples and Elms had a gray appearance, owing to attacks by little red mites, and in a few cases the Lindens had lost many leaves from this cause.

The site of the old fortifications, extending in a semicircle within a part of the city, forms a pleasant, though narrow, park-like promenade and recreation-ground. Our common Locust has been much planted here, and as it is free from the attacks of the borers which specially trouble it in its native land, it attains to fine proportions, some of the trees being three feet in diameter. The White or Silver, the Ash-leaved and the European Field Maples (Acer campestre) have all attained fine size. A specimen of the Striped Maple (A. Pennsylvanicum) was noticed, which is grafted on the Sycamore Maple (A. Pseudoplatanus) at five or six feet from the ground. Both stock and cion have grown at about the same rate and are now a foot in diameter; but the difference in bark makes the point of juncture very noticeable and forms an unpleasing contrast. The borders of ponds and banks of the streams are often made pretty and natural by grasses, reeds, shrubs and overhanging trees.

The Botanic Garden at Hamburg is arranged according to Endlicher's system of classification. In some respects the collections are not so interesting as those at Copenhagen, and at the time of my visit (August 15th) the garden had a somewhat weedy and neglected appearance. It seemed odd to find the Norway Spruce still labeled "Pinus Abies," and the European Larch as "Pinus Larix." There are a number of good examples of American trees here, among them Taxodiums, Black Oaks, Gymnocladus, Liriodendron and Magnolia acuminata.

Perhaps the most interesting tree in the garden is a specimen of the so-called Byzantine Hazel (Corylus Colurna). Our American Hazels are all mere shrubs, and we are apt to think of all Hazels as little more than bushes. C. Colurna, however, becomes a tree, and the specimen in the Hamburg garden is perhaps a fair example of what it may be at maturity. This is a tree about sixty feet high, and with branches shading a piece of ground forty-five or fifty feet across. The trunk is two and a half feet in diameter at three feet from the ground, and it divides into three main limbs at five or six feet. The branches diverge at a somewhat sharp angle, and the bark of the trunk is gray and rough. It is a finely shaped tree with rounded top, and at a little distance it has something of the outline and aspect of a small-leaved Linden. Not much space is given to greenhouses, and a Victoria regia house is considered the chief attraction.

South of Hamburg the railroad to Cassel passes through the great Lüneburg Heath, a series of sands and bogs densely covered with a thick close growth of Heather (Calluna), which had just come into good bloom at the time I passed through, so that the wastes were assuming a purple color. Enormous quantities of Scotch Pine, some White Birch and Alder, and also Norway Spruce, have been planted in various places, so that the country wears less of a barren look than it once did.

Probably no part of Germany possesses and shows such favorable conditions for the growth of trees as Cassel and its vicinity. The park known as the "Auegarten," said to have been designed by Le Nôtre, the illustrious French landscape-gardener, is regarded with feelings of pride by the present generation of the citizens of Cassel. The trees have attained splendid proportions, are in excellent health and vigor, and are generally so planted and grouped as to give plenty of chance for development, and at the same time leave openings which afford many pretty and varying vistas. A better and much more beautiful and picturesque treatment of the water might easily be made, for the banks of the ponds are generally rather bare and uninteresting.

This little park is less known than it deserves to be, and perhaps this is in part due to the fact that the park, water-falls and gardens of Wilhelmshöe are so near and are so much more attractive to the popular mind. Wilhelmshöe, with its Hercules, its artificial water-falls, grottoes and fountains, presents a striking contrast to the simplicity of the Muskau Park, which has been already noticed; and when the magnificent situation of Wilhelmshöe is considered, it is easy to imagine how much more might have been made of it in different hands and with different ideas of landscape-design. The great cascade, nearly a thousand feet in height, or rather in length, at a little distance, looks more than anything else like a gigantic stairway built for the descent of Hercules, though it remains a mystery how Hercules is to get down from his pedestal on the top of the mountain. Leaving out these attractions, however, there are many beautiful and picturesque stretches and vistas in the park, where no offensive artificiality is apparent. There is much quiet natural beauty in the woods of Wilhelmshöe, and its handsome healthy trees have an attraction for every one interested in dendrology. Before fairly entering the park, on the way from Cassel, one is struck by the fine proportions and vigor of the groups and specimens of Lindens, and for a study of these trees there can be few better places. Tilia parvifolia and T. platyphyllos are the most abundant and furnish the finest examples, but T. vulgaris and T. argentea are also growing with them. The last was in full bloom (August 17th) and very fragrant, while the fruit of T. platyphyllos was conspicuous by its large, full size.

Within the park proper and on the lower part of the mountain, the Silver Firs (Abies pectinata) and the Norway Spruces form the finest and noblest examples of tree-growth to be seen in the region. There are many fine groves and groups of these, many individuals with trunks almost four feet in diameter and perhaps a hundred and thirty feet in height. Some very fair specimens of our White Spruce (Picea alba) seem like dwarfs beside the magnificent Norway Spruces, but the first have only been planted about sixty years, whereas the others have perhaps been growing for two or three hundred years. The Norway Spruces here do not give the impression of a straggling or ugly habit, so much complained of in America when the trees become old. Good specimens of the Red Cedar (Juniperus Virginiana) have much of the aspect and are about of the average size of those usually seen in New England. Here we find large old specimens of the European White Birch (Betula alba), with slender, string-like branchlets eight or ten feet long depending perpendicularly from the branches. These slender, drooping branchlets are a striking peculiarity of old specimens of the Norway Spruce and of this Birch, a characteristic rarely seen in our allied north-eastern American trees. Many of our native trees and shrubs are to be found here, and apparently nearly all such as are hardy grow with the same luxuriance as the indigenous arborescent vegetation. The coldest temperature here rarely, or almost never, touches zero of Fahrenheit, and although Wilhelmshöe is situated at a higher elevation than the city of Cassel, it is said to be liable to less severe cold in winter. This is accounted for by the presence of the surrounding woods and the open running waters. A little tree rarely seen in cultivation, though early introduced, is our Dwarf Chestnut, or Chinquapin (Castanea pumila), which I found here twelve feet high and fruiting freely. Such of our deciduous trees as the Striped Maple, Common Catalpa, Willow Oak (Quercus Phellos), etc., are represented by very good mature specimens; while Pinus ponderosa and other American conifers are large enough to bear

plenty of fruit. The purple-leaved Myrobalan Plum, commonly known in nurseries as Prunus Pissardi, is here a tree eighteen or twenty feet high, and is probably one of the largest in Europe.

Through the kindness of the courteous Hofgärtner, G. Fintelmann, I was shown the collections within some private enclosures, where many of the rarer and choicer plants are kept. A part of these enclosures is devoted to glass houses and frames containing plants with which I am not familiar. Among these may be mentioned very fine hybrids of Streptocarpus Rexii and other species, and a magnificent collection of Begonias well worth going a long way to see. These Begonias are a specialty at Wilhelmshöe, and some of the single and double yellow flowers are particularly fine. In the collection are some fine forms of the Peruvian Begonia Davisii and B. polypetala. Much care is taken in propagating and selecting these plants, and they are not distributed, but strictly kept for home use.

Of all the plants in the open air within the enclosures, perhaps the best and most interesting specimens are two examples of the Japanese Umbrella Pine (Sciadopitys verticillata), both of the same age and from the same lot of seed. One is fifteen feet high and of erect open habit, while the other is only about seven feet in height, is much more compact and has a broader spread of branches, so that it seems as though an equal amount of growth and development had been expended in this direction as in attaining a height of fifteen feet. When I saw it the taller plant was bearing fruit and good seed. The first cones and seeds were produced five years ago, and the seedlings raised from these show the same tendency to vary and separate into the two forms—one with an erect slender growth, the other with a dwarfer, more compact habit. The cones of the Umbrella Pine are pendulous, and are produced on the upper branches above the male flowers; and, unlike those of the true Pines and some other conifers, they mature in one season. The Wilhelmshöe plants are not so tall or large as some to be found in other places on the Continent and in England. Though not remarkable as a specimen, another fruiting conifer was Torreya nucifera, of Japan, whose egg-shaped fruit somewhat resembles enormous berries of the Yew. The Torreyas are rather rare in cultivation, and they are hardly capable of well withstanding climates much colder than that at Wilhelmshöe.

It was pleasant to see the Rhodora thriving here in fine clumps; and a charming little rockery contained, among other interesting things, a quantity of the little Dwarf Cornel, or Bunch Berry (Cornus Canadensis), which was still producing a few stray flowers. Fatsia horrida has generally been regarded as a rather difficult plant to cultivate, so that it is perhaps one of the rarest and most unusual shrubs in collections. A specimen here was bearing bright scarlet fruit, but the flowers are said to be liable to some injury by late spring frosts. It may be that, besides the cultural attention it gets here, this Aralia also finds something in the half-mountainous, temperate and moist situation and climate which distantly corresponds to its native home in north-western America.

Arnold Arboretum. *J. G. Jack.*

Primitive Vegetables of Texas.

IN the spring of the year 1855 a body of French colonists, fresh from the old country, established themselves in Dallas County, Texas, which was at that time very thinly settled. Game was plentiful, fish not scarce, and beef very cheap, but beyond Indian Corn and Wheat no vegetable food could be obtained. As a rule, the French are not a carnivorous people, and therefore the lack of vegetables in variety was keenly felt. True, the colonists had brought along with them vegetable-seeds of many kinds, but when they arrived the season was already too far advanced to permit a proper preparation of the ground, and the weather that year was so dry that hardly anything would grow. The crop therefore was a flat failure, and the suffering colonists were forced to search among the wild plants for some substitute for the vegetables they so highly prized.

The earliest plants to attract their attention in the spring were two species of Astragalus, one of them A. Plattensis, growing in sandy soil, and the other A. caryocarpus, growing in black prairie-land, and bearing early flowers not devoid of beauty, which are succeeded by round, fleshy, sweet pods of the size of a large gooseberry, to which they have some resemblance. These were called buffalo peas, or prairie apples, and they were used as substitutes for garden peas, and rather unsatisfactory substitutes they were. Children, and occasionally grown persons, ate them raw, and in that way they were really more acceptable.

In the way of salads the country was more generous. A true Lettuce was found (Lactuca scariola), a perennial, and quite an early plant, which was succeeded by a kind of Dandelion (Pyrrhopappus multicaulis) and a Primrose (Œnothera trilobata). This last is worth more than a passing mention. It is an annual plant which grows in winter and early in the spring, and which produces in long succession large bright yellow flowers, each one of which lasts for a day only. They spring from the ground, having no peduncles, and the plant, which is quite ornamental, has no stems. The large square capsules or seed-vessels are borne in large conical bunches, which are not unlike the pineapple in appearance, and are very striking after the leaves have disappeared. The plant is used as a salad just as the Dandelion is. The Lamb Lettuce was represented by the Valerianella amorella, and for Celery an early stemless plant belonging to the Umbelliferæ was used (Peucedanum fœniculaceum), whose blossoms and leaves much resemble those of the Sweet Fennel, although it tastes like Celery. Two species of wild Onions were also used; these were Allium Canadense and A. Nuttallii.

Another plant which deserves mention is a bulbous one belonging to the Iris family, and closely related to the Tigridia. It is Nemastylis geminiflora, and it was found growing abundantly in the black prairies. It produces a small brown bulb that is farinaceous, sweet and palatable, and the hogs were so fond of them that when free they nearly exterminated the species. It is not improbable that with care and cultivation this would prove of some real value as a garden-vegetable, and, as it is, it well deserves a place in the flower-garden. It bears a dozen or more flowers on each stem of a beautiful blue, or sometimes white. Most of these vegetables are little used now since better ones have taken their places; but the four salad-plants I have mentioned are still in use not only by the French, but by the American settlers, who have learned to appreciate their value.

Dallas, Texas. *J. Reverchon.*

New or Little-known Plants.

New Orchids.

Cypripedium × Baconis, Kränzlin, is a secondary hybrid raised in the establishment of Messrs. F. Sander & Co., of St. Albans, from C. × chlorops, Rchb. f., crossed with the pollen of C. Schlimii. It is said to have flowers much resembling the mother plant, and to be of easy and luxuriant growth. The seed was sown in November, 1888, and the seedlings flowered in January last.—*Gardeners' Chronicle*, February 6th, p. 171.

Catasetum Liechtensteinii, Kränzlin.—A species very closely allied to C. Trulla, Lindl., which appeared in the collection of the Fürst Liechtenstein. The pendulous raceme is said to bear about twenty flowers, with grassy green sepals and petals, and a similar lip, with blackish brown on the edges and lower parts.—*Gardeners' Chronicle*, February 6th, p. 171.

Cypripedium × Leda, Hort.—A hybrid raised in the collection of John C. Bowring, Esq., of Forest Farm, Windsor, from C. × Harrisianum, crossed with the pollen of C. venustum. It is said to be fairly intermediate in character, except that the purple stripes on the dorsal sepal of the mother plant are almost obliterated, and the sepals somewhat approaching those of C. villosum.—*Gardeners' Chronicle*, February 13th, p. 202.

Cycnoches glanduliferum, Rich. and Gal.—A Mexican species, long very imperfectly known, which has flowered both with Mr. W. Bull, at Chelsea, and Mr. J. Charlesworth, of Heaton, Bradford. The male flowers, which are light green, spotted with brown, with a white lip, are borne in a long pendulous raceme; the females are at present unknown.—*Gardeners' Chronicle*, February 13th, p. 204.

Cypripedium Chamberlainianum, O'Brien.—A very distinct and beautiful species imported from some part of New Guinea by Messrs. F. Sander & Co., of St. Albans. It belongs to the same group as C. Rothschildianum and C. Stonei, though it has so few characters in common with them as to have been described as the first of a totally new section of Cypripedium. Native specimens have spikes

showing from twelve to as many as twenty flowers, the bracts being much closer together than usual. The flowers are yellowish white with rosy purple markings. The petals are spirally twisted, comparatively short, and nearly horizontal, and the pouch much inflated. It is a great acquisition.—*Gardeners' Chronicle*, February 20th, pp. 234, 241, fig. 34.

Dendrobium O'Brienianum, Kränzlin.—A Philippine species, introduced by Messrs. F. Sander & Co., of St. Albans. The small flowers are yellowish green, and borne in long drooping racemes. It flowered at St. Albans in the autumn of last year.—*Gardeners' Chronicle*, February 27th, p. 266.

Cypripedium × Lucie, Hort.—A hybrid raised by Monsieur Moreau, of Paris, by crossing C. Lawrenceanum with the pollen of C. ciliolare. It bears a strong resemblance to the mother plant, though somewhat modified in the direction of the other parent.—*Orchidophile*, 1892, p. 17, with colored plate.

Kew. *R. A. Rolfe*

Fig. 26.—The Pepino, Solanum muricatum, in fruit.

The Pepino.

OUR experience in fruiting the Pepino during the past year differs somewhat from that of Professor Bailey, as detailed in a recent bulletin from the Cornell University Experiment Station.* The experiment at Cornell, an account of which was given in Garden and Forest (vol. v., p. 95), seems to indicate that but one fruit sets in each flower-cluster. Of our plants one bore two fruits in the manner described, while the others, cuttings from the first, were much more prolific, bearing six to eight fruits in each cluster. The accompanying photograph represents one of these plants. The photograph was taken on February 25th, and the plant was about three feet high. It will be observed that the peduncles are not elongated to such an extent as they are when only one fruit develops. I have noticed the same trait in the Egg-plant. That is, when fruit fails to set, the stem and calyx are often elongated abnormally.

In view of the natural habitat of the plant, in the highlands, where the temperature is relatively low, and of the fact that the fruits never set well in Florida except during a cool period, it would seem that we have some hints for treatment under glass. Heretofore I have never succeeded in obtaining any fruit, though the flowers were repeatedly pollinated by artificial means. The plants at this time were grown in a Tomato-house with a night temperature of sixty to sixty-five degrees. During the present season the treatment has been very different. The plants were from cuttings started in May. During the summer they were in four-inch pots plunged out-of-doors. In the fall they were removed to six-inch pots and placed in the house. Since then they have been kept in a cool house—forty-five to fifty degrees—and have received no bottom heat. This treatment has proved much more satisfactory than the other in inducing the fruit to set; but, as before, a large proportion of the blossoms fail to set fruit. The lower temperature seems also to develop to a higher degree the peculiarly rich flavor of the fruit. Professor Bailey compares the flavor to that of a "juicy, tender, somewhat acid egg-plant." With us the flavor has been decidedly musky; so much so, that when tested recently by several parties

* Bulletin 37, Cornell University Experiment Station.

the universal comment was, "much like a cantaloupe." There is, however, an agreeable acidity which is very distinct.

It seems certain that the Pepino will prove a valuable acquisition if we can determine the proper conditions for fruiting it under glass.

Maine State College. *W. M. Munson.*

Foreign Correspondence.

London Letter.

Ranunculus cortusæfolius.—A flowering specimen of this plant, which was described by Sir W. Hooker forty years ago as "unquestionably the handsomest of all the Buttercups," was a special attraction at the last meeting of the Royal Horticultural Society. It was sent by Lord Hylton, of Merstham House, in Surrey, where I am informed it grows well in the open air with a little protection in winter. It is a rare plant in English gardens, notwithstanding its introduction forty years back and the unquestionable beauty of its flowers. It has a large fleshy, tuberous root-stock, an erect stem as thick as a man's little finger, and sometimes four feet high, freely branched above. The leaves are a foot across, slightly lobed and toothed, hairy, as also are the stems. The flowers, which are in large, broad, crowded corymbs, are erect, two inches or more across, golden yellow, varnished or shimmering, as in all Buttercups, the petals of good substance, the fragrance strong and pleasant. The Rev. E. J. Lowe, writing of this plant in *Hooker's Journal of Botany* (vol. ix., 69), says it is a very striking, large and handsome plant, of almost gigantic size and stature in its genus and of a noble appearance. Its enormous Buttercup-like flowers are conspicuous at considerable distances on the ledges within the clefts of high rocks or cliffs in the ravines in Madeira. It is also found in the Canary Islands. Another name for it is R. grandifolius. At Kew the plant is not hardy, but the late Mr. Giles Mundy grew it well in his little garden at Farnham. It is curious, too, that, while Mr. Smith stated in the *Botanical Magazine*, under tab. 4625, that it required the protection of a frame or handlight in winter, Sir W. Hooker says in the same place that "it is quite hardy." In favored localities I know it thrives in England. It is worth growing as a pot-plant for the sake of its handsome fragrant flowers which open in March.

Schizocodon soldanelloides.—A living example in flower of this very interesting little Japanese plant has lately been sent to Kew by Captain A. Torrens, who collected it while in Japan, and in whose garden in Kent it has flowered probably for the first time in Europe. Its interest lies in the fact that it is very closely related to Shortia galacifolia, which, I believe, has been found wild in Japan as well as in North America, and used to be known as Schizocodon uniflorus. There is a close family resemblance between this newcomer and the Shortia, but the former has a short decumbent stem, shining green ovate, cordate leaves about an inch long, and a two-flowered scape. The flowers are like those of the Shortia, but more cupped, and with linear instead of scale-like staminodes. A figure of the plant has been prepared for publication in the *Botanical Magazine*.

Dendrobium Phalænopsis Schrœderianum.—The plants recently introduced by Messrs. F. Sander & Co. are proving exceptionally rich in variety both of color and size of flower. At the last meeting of the Royal Horticultural Society a group of about a dozen plants, all in flower, was shown by an amateur, Mr. E. M. Mundy, and among them was one with almost pure white segments, another with mottled segments, and one with flowers of the deepest colors, and exceptionally large in size, measuring four inches across. These flowers were all produced from newly made growths, a fact which proves that under cultivation this Dendrobium will grow well—far better than most of the Dendrobiums from the same region. We have plants of it growing freely in a hot moist house, such as suits Phalænopsis, but unshaded.

Cocos Weddelliana.—This is the most popular of all the Palms which are grown here for the decoration of rooms, dinner-tables, etc. It is easily grown, assumes an elegant appearance from the first, and it always sells well. Over one hundred thousand seeds of it were sold by auction in London a few days ago. Although discovered by Dr. Weddell in 1831 it was not introduced into cultivation until about thirty years afterward, when L. Van Houtte, of Ghent, distributed it under its present name. A few years later it again appeared under the name of Leopoldinia pulchra, and at a still later date as Glaziova elegantissima. There is a figure of it in Wallace's *Palms of Brazil*, where it is called Leopoldinia pulchra, and described as an elegant Palm, with a stem eight to twelve feet high and two inches in diameter with leaves seven feet long, which, on certain saints' days, are used for the decoration of altars and similar sacred purposes. It is so abundant in some parts that its stems are commonly used for making fences. The seeds are ovoid and one and a half centimetres in diameter.

C. insignis, otherwise known as Glaziova insignis, is almost as elegant a plant, the fronds being a little broader in the pinnæ and the stem perhaps a little thicker, otherwise it is quite as strikingly graceful. It has the merit, too, of being satisfied with the temperature of an ordinary greenhouse. There is a good example of it in the winter garden at Kew, which has borne the minimum temperature of forty to forty-five degrees for the last two winters without suffering in the slightest. It would certainly thrive in the open air in the warmer states; for instance, in south California. It is a native of Brazil.

A Bamboo Garden.—This is the latest addition to the special gardens at Kew. Hitherto the hardy Bamboos have been scattered over the garden or grown in a position ill-adapted for some of the kinds. The new garden is about a quarter of an acre in extent and is oval in form, with sloping banks and a large depressed central area. The garden is surrounded by trees, to which an informal belt of shrubs has been added. Beside Bamboos it is proposed to grow in this place all the large hardy Monocotyledonous plants, such as hardy Palms, Yuccas, Gyneriums, Arundos and Eulalias. The species of Bamboo known to be hardy at Kew are the following: B. Metake, B. Simoni, B. viride glaucescens, B. Quilloi, B. palmata, B. tessellata, B. Fortunei, vars., B. nana (Hort.), B. nigra, B. mitis, B. quadrangularis, B. Kumasaca.

Shrubs for Forcing.—Flowers out of season have an attraction for most people. Plants that may be made to produce their flowers at a time when there is a dearth of bloom are of special value in the garden. To know what plants will force well is to be well equipped for emergencies in flower demand. There are, of course, numerous old stagers such as the old white Azalea, Camellias, Azalea mollis, Roses, grandest and most useful of all, and now not considered out of season at any time of the year. Then we all force Hyacinths, Dicentra, Spiræa (Astilbe), Daffodils, Tulips, etc. There are beside these numerous other plants of special value to force, and some of the best of these are shrubs. We use Forsythia suspensa, a beautiful plant when forced; Prunus Pissardi, P. triloba; Pyrus malus, var. floribunda, whose beautiful wands of white flowers are rendered more beautiful by the rich crimson color of the unopened buds. Staphylea Colchica is now as well known as Deutzia gracilis, still one of the best of white-flowered plants for this purpose. Lilac, too, is becoming common, and so is Daphne Genkwa, the blue Japanese species. The red-flowering Currants are charming greenhouse-plants when forced so that their branches are wreathed in flowers in February. The large-flowered Laurestinus, known as lucidus, is beautiful when forced. Nothing could be more beautiful than pot specimens of the double-flowered Peaches when forced into flower by the end of February. Well managed, the branches are laden with large Stock-like blooms, beautiful in the mass, and

valuable for bouquets and such like flower-arrangements. Spiræa confusa has crowds of bunches of white Hawthorn-like flowers. Many of the early-flowering shrubby Spiræas would force well. Guilder Roses are prettier when properly forced than they are out-of-doors. To force flowers simply to get them out of season is a practice with little to recommend it, but to be able to keep up a supply of flowers all the year round for the conservatory and indoor use by subjecting suitable plants to a higher temperature than they really require is good gardening. The Royal Horticultural Society offered prizes for the best collections of forced shrubs to be exhibited this month, but nothing of special value was shown. There were, however, beautiful pot Roses from the Pauls; Azalea mollis and Lilacs, besides lovely basketfuls of flower-branches of double Peach and Forsythia from Messrs. Veitch.

London. *W. Watson.*

Fig. 27.—A Japanese Garden.—See page 170.

Cultural Department.

A New Disease of the Tomato.

ONE of the greenhouses of the Cornell Experiment Station is devoted to the forcing of Tomatoes, and until the past season the plants have been vigorous and have borne well. But last autumn some of the fruiting plants showed signs of disease; they were weaker, the leaves appeared smaller, and the plants assumed a light green or yellow color. The cause of this change was at first not known, but as the disease progressed it gave evidence of a bacterial nature, and these organisms are now thought to be the cause of the trouble. They are readily found in the tissues of affected plants, and laboratory cultures develop them in large numbers. We thought that this bacterium might be identical with the one which is sometimes so destructive to Potatoes, for the appearance of the disease in the two plants is similar, but Professor Burril, to whom specimens were referred, has just reported that the two diseases are probably distinct. It is certain that the disease can be communicated to the Potato, for diseased Tomato-cions have been grafted upon healthy Potato-plants, and the latter are now plainly affected.

The first indication of the presence of this disease in Tomatoes is shown by the foliage. Small, often vaguely defined leaf-areas lose their dark green color, and become light green; these portions soon turn yellowish, and at the same time the leaf begins to curl, the outer edge being generally drawn downward. This causes the leaves to appear considerably smaller, which is quite characteristic of the disease. The discoloration of the leaves progresses slowly, while the portions which were first affected gradually die, giving the leaf a spotted appearance. The spots increase in size and their form becomes very irregular, and in this manner each leaflet succumbs. Upon the fruit the first symptom is a translucent appearance of portions of the outer wall. The centres of these portions turn brown and then black, while the disease spreads more or less rapidly at the outer edges, where a border of the translucent tissue is generally found. The fruit borne by diseased plants also appears to be more irregular than that upon normal plants.

The Tomato-plants are grown in boxes, and the manner in which the disease spreads from one to the other is not known. The plants first affected were situated at one end of the house, and those nearest to them were the next to show the disease. One plant, standing about fifteen feet from the rest, has remained healthy to the present time. It is quite certain that healthy plants will become diseased if they are set in infested soil, for several have been treated in this manner and all are now affected. One plant had discolored foliage in less than three weeks. Others were set in clean soil and they are healthy, although it is about four weeks since the disease first appeared in the other lot.

The boxes in which the first diseased plants were grown were used again for the next crop, but they were treated in different ways, in order to discover some method of destroying the disease. Some boxes were whitewashed, some were washed with the ammoniacal carbonate of copper, others with lye, and others were set out-of-doors to freeze. All were then placed in the house with clean soil, and young healthy plants were set in them. No beneficial effects of the treatments can be seen, for the plants are all diseased. Spraying with copper compounds has also proved useless. Undoubtedly, all treatment must be preventive and strategic. Care should be exercised in securing clean soil, etc., and the immediate removal of diseased plants may prevent the disease from spreading to any serious extent. Possibly this serious disease is identical with the Southern Blight, recently reported by Dr. Halsted in a bulletin of the Mississippi Experiment Station.

Cornell University. *E. G. Lodeman.*

Fameuse and other Canadian Apples.

THE article which follows was prepared for Garden and Forest by the late Dr. T. Sterry Hunt a few days before his death, and it has been sent to us by his friend, Mr. George Iles:

Apples, we learn from antiquarian examination, were used for food by the prehistoric dwellers in the lake habitations of Switzerland. Early records of western civilization give constant testimony of the value attached to that precious fruit. The influence of soil and climate on the quality of the grape has been very thoroughly investigated, and we have every reason to believe that similar conditions are not less important factors in the cultivation of the Apple, although the subject has scarcely received the attention which it merits from pomologists. For illustration of this we might mention an apple in the St. Lawrence valley, known as the Fameuse, which is greatly prized for its texture and flavor, and commands a high price for exportation. It is worthy of notice that this apple attains its perfection only in certain soils which come from the slopes of the small hills in the St. Lawrence valley, Mount Royal, St. Hilaire and Rigaud. It is in well-drained soils derived from the crumbling volcanic rocks that the Fameuse thrives best. Fruit of this same variety grown on the clay soil of the valleys near by is readily distinguished, alike in flavor and color, from that grown on the more favored soils.

Disregard of the needful conditions has led to many disappointments in the planting of orchards in this region. It is worthy of notice that the Fameuse trees are not quite hardy, and a certain portion of them are destroyed by frost before they attain the age of bearing. A seedling of the Fameuse grown in the upper Mississippi valley, where it has been named the Wealthy, resists the extreme cold of that region and of the Ottawa valley, but this hardiness has been attained at the expense of the flavor of the apple, which in the Fameuse is very delicate. It may be well here to mention some varieties of Canadian apples which have not received the attention they merit:

The St. Lawrence is an apple of rare quality and texture, which was a chance seedling in Montreal—the original tree still stands in Montreal, though mutilated, to make room for building purposes. The Russian Alexander, which is much finer in quality than either of the two Canadian varieties of the Alexander, is also becoming somewhat rare. The Golden Russet and Pomme Grise are small, but of unrivaled flavor and careful of preservation till the month of June. The Bourassa, a large reddish russet of extreme beauty and rare quality, originated in the vicinity of Montreal, but is, we fear, lost sight of. All these apples are worthy of careful attention by pomologists.

An interesting fact in relation to the Rhode Island Greening is worth noting. This apple, which, in my boyhood, was a great favorite in eastern New England, seems in late years to have fallen into comparative neglect there, and in some districts its cultivation has been abandoned. I was therefore pleased to find it a few years since in the irrigated soils in the vicinity of Salt Lake, Utah, where this fine apple seems to have recovered the flavor and the texture which made it originally such a favorite in the east.

Violets.

FASHION can never interfere with the popularity of the Violet. Since the introduction of the Parma and Marie Louise forms of the Neapolitan, the type is grown much less than it once was. Though, on the whole, inferior, both from a decorative and commercial point of view, to the newer varieties, it nevertheless has a conspicuous and in some ways superior merit. From my acquaintance I should say it was not quite so early as the others, but is more floriferous and is less liable to disease, and in this way makes up for lack of size and color. Some attempt was recently made to introduce the Parma, so extensively grown for the Paris market, as a rival to the Marie Louise, the general favorite of England and America, but so far without success. The French variety bears abundant lavender-blue flowers, without any trace of purple, and has not the white markings at the base of the centre florets, which, it is contended, is against the Marie Louise. The fact that the latter is not a perfectly double flower, but often comes with a flat, malformed centre, is, I think, an objection of greater weight. The Parma has, moreover, proved more susceptible to both the leaf and root disease than any other variety. Lady Campbell, a blue form of the Neapolitan imported last season, promised, judging from half a dozen plants here, to be a decided acquisition. The flowers are superior in form to any of this section. The petals are long, and the flower is quite double to the centre. It is recommended as being a continuous and heavy bloomer, which seems probable. Comte de Brazza, the white Neapolitan, a handsome double-flowered variety of good constitution, has not won popular favor. It is nevertheless worn by a few ladies, and highly prized by them for evening dress.

After close comparison between the Russian Violets and the typical V. odorata, I have failed to find any considerable structural difference. Certainly the Giant Czar, the most distinct form of the Russian class, does not differ more from the type than does the Neapolitan; and some of the smaller Russian, such as London and Rawson's White, have a very close resemblance. The Giant Czar and its deeper-colored forms, Wellsiana and Lee's Victoria, are the best of all the single varieties. They force remarkably well, and as many as three crops have been taken out of one house during one season. This necessitates a large stock of plants, which, however, is easy in the case of this variety, as it multiplies rapidly. The plan requires a low, well-lighted house, kept at about fifty-five degrees, Fahrenheit, night temperature. A batch can be forced into bloom and cleared out in six weeks, ready for another crop.

There is a variety of V. odorata growing wild in the southern states, particularly in Florida, which is said to have been imported from England. It is probably somewhat changed through acclimatization. The southern variety under cultivation here blooms very early, being at its best during the last three months of the year. Mrs. J. L. Gardiner, of Brookline, Massachusetts, found a form of this southern variety near St. Augustine, Florida, which has been called the St. Augustine, and it well deserves a distinctive title. It is evidently very free from fertile flowers, and blooms profusely the whole winter. The flowers are not large, but abundant and very sweet. The Schonbrun is another variety of V. odorata, which has been confounded with the southern one. It is quite hardy here, and after the first few bright days in spring is a perfect sheet of bloom.

There is much diversity of opinion as to the best method of outdoor cultivation for violets. To my knowledge, good Violets have been grown between Raspberries, under Pear-trees, in light soil, clayey soil, with and without manure, and in full sun. My experience has shown that they luxuriate in rich soil, plenty of moisture and full exposure. Some growers take their stock plants in winter, try rooting the runners, which is a good plan when there is danger of disease, but generally old plants are divided into two or three crowns. Until last year I had kept all runners clear off during summer, but I found where a few had been left, when transplanted into the flowering-bed, along with the old plant, they bloomed well, and will make very good plants for outdoors this season.

A multitude of remedies has been suggested for the Violet disease, but few have stood the test of time. There is no doubt that copper sulphates will stay the disease, but even if the plants recover it is not probable that they will yield many flowers. My Violets certainly were healthy last autumn and have remained so, and bloomed well all the winter. When fairly established, I dusted them with a mixture of black sulphur and guano, which was watered in. I also have given them two waterings with manure-drainings; whether or not this has acted as a preventive of the disease I cannot say; it certainly has increased the vigor and healthfulness of the plants.

Wellesley, Mass. *T. D. Hatfield.*

The Spring Garden.

NOTHING in nature is more impressive than the annual change from winter to spring. This phenomenon, as old as the world, one never ceases to witness with interest, or to wonder that one clear perfect day of winter should insensibly change in a few hours into an equally perfect day of balmy spring. The atmosphere seems no clearer, the sun shines no more brightly, yet some subtle change has come to earth and air which we at once recognize but cannot describe. If one were otherwise insensible to the change, the myriad small denizens of the fields and woods would by their various shrill noises make the fact quickly known. A few hours, also, will show a great awakening of vegetation, and sometimes, as in the present season, the change is almost as sudden as the revolution from rest to flower, which we read of in the Arctic zone. The first of the present month brought the spring change, which passed as rapidly into an unseasonable summer temperature. This is always somewhat unfortunate from a gardener's point of view. The small early flowers suffer from the great heat and rapidly decline, while the Narcissi, which have been quietly making growth, come

rapidly into too premature bloom without waiting for full development of foliage. In only three days Narcissus Pseudo-Narcissus and N. bicolor præcox led the van of Daffodils, followed rapidly by Ard Righ, the Tenby, Countess of Annesley and Scoticus, in this order. One welcomes the Narcissi at any time, however, for from the time of their flowering till the last of the Chrysanthemums in November there should be no lack of useful flowers in the garden if it contains a good supply of bulbous plants for the early year. Good early-blooming herbaceous plants are not so plentiful, and reliable ones are, in fact, rather scarce and difficult to maintain in this latitude with its vicissitude of frosts and thaws. Rock-cress is one of the few satisfactory things flowering just now. The first of the hardy Primulas are just opening, and, of course, Bellis perennis expands with the first warmth. The Hellebores also are apt to give some flowers now—my garden not being one of those fortunate ones where the Christmas Roses flower amid ice and snow, as so beautifully figured in the catalogues. Some Snowdrops are still in full beauty, making a season of five months of this charming flower.

This is a good time to arrange for a water-garden if not already provided for. No feature of gardening is more satisfactory and enjoyable, and no garden should be without some arrangements for growing water-loving plants. If Nymphæas are grown it is necessary to remember that the tank should be an aquarium, so that it be properly stocked with fish as well as plants. My tank contains only 150 cubic feet of water, and is only twenty inches deep, so that when the hardy Nymphæas were left in last winter, some with crowns within six inches of the surface, it was with considerable doubt as to their safety. The tank was covered with a layer of boards, and a thin covering of leaves over these. There seemed to have been not over two inches of ice at any time during the winter, and with more leaves there would probably have been none. The Nymphæas, Sagittarias, Limnocharis and Aponogeton came through the ordeal safely, and only need a replanting in boxes and a little warmth to start them into full growth. Some of the Nymphæas start up very quickly. A large plant of N. chromatella, which was wintered in the cellar and was entirely dormant, woke up in three days when placed in a pail of water in the greenhouse at sixty degrees. There seems to be no difficulty in wintering hardy Nymphæas, and the tender ones after they have made tubers, but some varieties, like N. Zanzibarensis, are very unreliable keepers with most growers, and it is to be hoped that some one will explain how they may be wintered with certainty when they have not formed tubers. In my small experience a check from leaving them out too late, or a low temperature at any time, seem fatalities from which they do not recover.

Elizabeth, N. J. *J. N. G.*

The Water-garden.

AFTER months of anxious waiting April is a busy time in the water-garden, and this year in particular, when severe January weather followed hard after a few softly beautiful days in March, one cannot help feeling some excitement as the covering is cleared away and the effect of the winter upon some water-plants of suspected hardiness is examined. This clearing away of all litter is the first thing to be done in water-gardens north of New York, where the tanks have had a covering, and in many cases where the water is deep, it will be necessary to draw off some of it, so that the plants can be more readily examined. In the neighborhood of New York I have not yet heard of any Water-lilies perishing on account of the hard winter. Marliac's yellow Nymphæa has already made large growth as compared with our native Pond Lily, and the Nelumbiums—N. speciosum, N. nuciferum and N. luteum—are also showing growth above the soil. Little difference can be seen between these Nelumbiums wintered under water and those with the water drawn off and covered with leaves and litter alone. Some persons find difficulty in establishing N. speciosum, the Egyptian Lotus, and the plant deserves attention at once. If tanks are to be built, the work must be pushed. In tanks already in use, the water should be drained off and a top-dressing of rich compost should be given. If this compost was prepared last season of turfy loam and thoroughly decomposed manure, in equal portions, it will be all the better. The compost to the depth of three inches may be placed directly upon the accumulation of dead leaves, where there is any, and upon it should be spread a dressing of clean sand.

If fresh roots are to be planted and the tanks are not ready or the weather is yet too cold, it will help a great deal if the plants are started in tubs, where they can be sheltered in excessively cold spells, to be planted out when settled warm weather comes and growth is active. Dormant roots should not be set in deep water, nor should growing plants have their leaves submerged. Roots dormant or just starting should be placed in tanks and covered with about six inches of water, which should be gradually raised as the plants advance. If it is desirable to set them in ponds or lakes, half-established plants may be placed near the edge, where they will be but a few inches deeper in water than where they were grown before. They require but gentle pressing in the mud, but where they show any tendency to rise a few bricks or stones will keep the roots in position until they take hold of the soil. Detective duty against musk-rats should be unceasing, for should these animals once get a taste of the plants they are doomed, and the same is true of Nymphæas. I am also of the opinion that turtles eat the buds of Nymphæas, and just now I am keeping them under close watch until convinced of their friendliness. Where the hardy Nymphæas need to be thinned out this work should be attended to at once and top-dressing should be given them, as has been recommended for the Lotus. Where new plants of Water-lilies are to be set in a tank they should have at first no more than six inches of water, until a stronger growth makes need for more.

Dongan Hills, N. Y. *Wm. Tricker.*

Primula Sieboldi.

THESE Japanese Primroses deserve a wider cultivation than they now enjoy. They are easily grown, soon form large clumps, have handsome foliage, flower freely, and are in full beauty from the middle of April to the middle of May, when there are not many flowers of any kind to be had. Since they flower so early, it is better to plant them in sheltered nooks, where they will be protected from cold winds, or to keep a temporary frame over them from the time they begin to grow till the bloom is over. Give air at all times during the day and mild nights, and take the lights off on calm days. This little extra trouble is well repaid by larger flowers of a brighter color, produced a week or fortnight earlier. A fairly light soil, well enriched with decayed leaf-mold or stable-manure, is well suited for their culture, but is not essential. I have seen these Primroses flourishing in full sun and in partial shade, but they last longer in beauty in the shade. A top-dressing of well-decayed leaf-mold or soil should be given in the fall, as the crowns are often above the soil when the plants have done growing. When hard frost sets in a slight covering can be given of boughs, with some litter thrown on the top (so that the litter does not rest heavily on the soil), or a temporary frame covered with a wooden shutter or boards can be used. Protection from frost is not necessary unless the winters are very severe or on soils where plants are much lifted by frost. The covering should be taken off as soon as frost is out of the soil, and where a frame is used a light can be put on.

The following varieties are distinct: P. Sieboldi, the type, has large umbels of bright magenta flowers with light centre; Intermedia, improved, has bright reddish crimson flowers in large umbels, freely produced; Lilacina has large fringed flowers, lilac, feathered with white, and light centre; Lilacina marginata has bold flowers, nearly as large as a dollar, with petals overlapping, the exterior of the flower light slate, the interior white, margined and slightly feathered with lilac; Magenta Queen has large dense umbels of clear magenta flowers, slightly fringed, and is one of the first to flower; Rosea alba bears abundantly flowers whose exterior is light, interior white; Rosea striata, flowers light lilac, shaded and striped; Violacea, flowers reddish violet, borne freely in rather loose umbels.

Norwood, Mass. *Charles H. Rea.*

Correspondence.

Mid-March in Northern California.

To the Editor of Garden and Forest:

Sir,—After an unusually mild winter there came in late February a series of clear warm days, with pleasant nights and a midday temperature which rose to eighty degrees in the shade. This continued for three weeks, and its effect on an already advanced vegetation may well be imagined. Narcissi were in blossom by the middle of February, and are now (April 1st) nearly gone, and so are Hyacinths. Early Tulips are well along; Violets, Primroses, Verbenas, and the whole line of spring flowers are in the full tide of bloom. Rose-bushes are a mass of buds, and in sheltered positions a few are in flower. At San Francisco, Callas and Roses are in full bloom, Japan Quinces have come and gone, Laurustinus and Photinias in

bloom, and the Persian Lilac nearly so. I saw the beautiful St. Bridget Anemones in full blossom over a month ago. Self-sown plants of Drummond Phlox are now in blossom. A striking feature of the spring blooms in California are some of the Australian Acacia-trees. Common here is A. molissima, specimens of which a month ago were great masses of yellow bloom, scenting the air for blocks around.

Wild flowers are over a month ahead of time. In February the Manzanitas were in full flower. These bushes are a feature of our scenery, growing in uplands and mountains in large dense masses, and this year they made an unusual display. Ceanothus divaricatus, very common in the chapparal growth, is now white with blossoms, and the Madroña is in bloom at this very early date, although May is nearer its proper season. In the open fields our common Buttercup is flowering in masses, and Nemophilas common. Castilleia parviflora, a dark red Painted Cup, is plentiful in the woodland. Everywhere the bright yellow flowers of Calandrinia can be seen peeping through the grass. Of Erodiums two species are very common here, and their pink flowers are everywhere. Within a week I have seen some flowers of our state emblem, the Eschscholtzia, or California Poppy. There is a second species of Ranunculus now blossoming plentifully in wet lands. In leaf and root it very closely resembles the garden varieties, but the flowers are yellow. Œnothera ovata, one of the sessile species, is flowering abundantly. The seed-pods of this species are formed several inches below the ground-level. I have seen several blooming plants of the Scarlet Larkspur, and a large plant of this in a wild bed is one of the prettiest things I have in flower now. In a cool situation and loose rich soil, few plants will give better satisfaction. In rock-work it is perfectly at home, and cliffs all aglow with its flowers are among the brightest Californian scenes.

One of the prettiest early flowers is Mimulus Douglasii, a tiny annual with a flower nearly two inches long. In my garden the native bulbs are unusually precocious. The first to bloom was Scoliopus Bigelowii, which was full of bloom at Christmas, and in a spot where it scarcely received the sun at all. The numerous flowers are produced on slender scapes, and are lined with brown and purple—more odd than pretty. The leaves, which at blooming are quite small, develop later till they are five or six inches long by two to three broad. The Trilliums—T. sessile, var. Californicum, and T. ovatum—were in blossom very early. The first is truly a beautiful plant. A specimen at hand shows petals three inches long, with the leaf five inches across. With us the petals are white, with more or less purple in the throat. Near San Francisco all range from rose-color to purple. I have never seen one here of a rose or purple color until this season. A plant which last year was pure white, but which stands where it did, under the shade of a Cypress-hedge, and is never reached by the sun, is now rose-purple. It is common for this species to throw up several stalks from one root, making a fine clump. T. ovatum is pure white, and very near to the eastern T. grandiflorum.

I bloomed three Erythroniums this season. E. grandiflorum (E. giganteum, according to Mr. Watson's revision of the genus published last spring) is a very free bloomer and easily grown. I find shade necessary to secure the finest flowers. This season I had a bed of E. Hartwegii, a rather rare species. The flowers are much the same as those of E. giganteum, but instead of being in a raceme each is borne on a slender scape, giving a very pretty effect. Smith's variety of E. grandiflorum is always beautiful in flower, but one could wish its blooms were borne more abundantly. As far as I have seen, it is a strictly one-flowered species. It is at first pure white, becoming rose-colored. A soil composed of equal parts of chip, or leaf-mold, and sand suits these Erythroniums perfectly; and if planted in a sunny position, the shade of a lath-frame or cloth sash will bring out the flowers in fine shape.

The Fritillarias have all done well in a loose soil of sand and mold. I blossomed a rather striking variety of F. lanceolata this season called Gracilis. The blossoms are more open than in the type, and the segments acuminate. It is very dark, many of the blossoms being nearly black. Held to the light it shows wonderfully rich colorings in dark red and purple. F. biflora is a species which takes especially well to cultivation, thriving in any loose rich soil and blossoming freely. The blossom, unlike those of most Fritillarias, is not mottled, but the coloring is in fine lines. But of the Californian Fritillarias none approach F. recurva, some specimens of which have borne thirty-five of its scarlet blossoms to the stalk, and are worthy to be compared with the Lilies for beauty.

But one Brodiæa is in blossom so far, the violet-headed one. Nearly all are budded at this very early date. Last year I gave the readers of Garden and Forest my methods of growing Calochortus. We learn by experiment, and last year taught me one valuable lesson. I had been giving C. venustus oculatus rather good loose soil, but one lot was planted in a poor yellow clay loam, a soil that baked like a brick. That lot excelled all others, giving fine stalks, large flowers and perfecting large bulbs. This season all my plants of that variety are in a clay loam, sifted, and I have never seen a finer growth. The same treatment should apply to all the varieties of C. venustus and to C. luteus and C. splendens. In richer soil I find the bulbs do not ripen in a healthy way.

Ukiah, Cal. *Carl Purdy.*

Notes on Grafting.—III.

To the Editor of Garden and Forest:

Sir,—It has been shown that for successful grafting a sufficient number of cions should be set to sustain a free circulation of sap and to keep all sides of the stump alive. The grafts, cut in February or March, and kept in moist earth in a cellar, should not be set until growth begins in spring and buds are bursting. The waxing of all cut surfaces, clefts and abrasions must be complete, and for this purpose liquid wax is preferable. To make this, take, say, one pound of rosin, one-fourth pound beeswax, one gill linseed-oil. Melt these together and mix. The wax should be of such temper that when cold it will be hard, yet tough—that is, not liable to fracture, as will pure rosin. It may be tested for use by dropping some of the melted wax on a chip and letting it cool. If it then prove too soft, add a little more rosin; if too hard, a very little more oil. The wax may be kept in a small iron kettle.

After setting, say, fifty grafts, warm the wax until liquid, but not scalding hot, and apply with a small paddle or a cheap paint-brush. Cover all wounds and the upper ends of the cions. It is a simple thing to shave a graft's lower end like a wedge and stick this into the cleft in the stock so that the inner barks of graft and stock may meet. If carefully waxed it will almost surely grow. I have set a thousand grafts a day, not using any especial care, except in the waxing, and had every graft grow. In my Pear-orchard are grafts which I set by simply driving a quarter-inch chisel slanting downward into the side of a limb and driving a wedge-shaped cion into the opening made by the chisel as one would drive in a peg, and then waxing. After a year's growth of the graft the limb can be sawed off above it in May or June, sloping downward behind the graft. The cut surface, if waxed or painted, will soon heal over. I have grafted Grape-vines successfully by boring a hole downward in the stock with a bit slightly smaller than the cion; then driving this into the hole as a peg, far enough for bark of graft and stock to join. Cover with moist earth, or, if high on the stock, with wax. After the graft has started saw off the vine.

Thousands of Apple and Pear-trees have been planted which have been grown from grafts set in root-cuttings, or from grafts or buds set upon the sprouts which spring up from the lateral roots of orchard trees where these roots have been torn by deep cultivation. Around a tree disposed to send up these sprouts from its lateral roots may be found several hundred of such growths springing up over a circle, say, twenty feet in diameter.

When there was large demand for nursery stock, and it was needful to have grafted trees as soon as possible, on account of the money they would bring, I have seen nurserymen's agents grafting or budding these root-sprouts by wholesale. Next year they were dug, separated, planted into nursery-rows and soon marketed as "grafted stocks."

Trees thus grown from the lateral roots of the parent tree are apt to be only superficially rooted; they will never have tap-roots penetrating deeply into the subsoil, but will stand flat-footed on top of the ground. They are apt to be injured by winds and droughts and cannot be durable, because they lack a good foundation. These defective trees may be known in the orchard by their tendency to throw up sprouts from their roots.

Sometimes trees in the orchard are damaged by sunscald on the southerly exposure of their trunks. Many of my grafted Apple, Pear and Cherry-trees have succumbed to this injury. On uprooting them I have found them all flat-footed, having no tap-roots. This observation led me to examine the roots of those trees that had escaped this damage, standing in the same orchard and subject to the same conditions. These trees all had tap-roots reaching deeply into moist soil, and thus sustaining vitality during intense surface-droughts.

The teaching of this is to plant only trees grafted on seedling stocks. The seedling naturally develops a tap-root and tends to renew it when it is cut off. A tap-root will never

start from a cutting, a layer or a cutting of a lateral root. This is exemplified in the root-system of Grape-vines which are grown from cuttings. These have their one or two tiers of lateral roots, starting from the buried nodes of the cutting. Thousands of vines have been extirpated in vineyards in south Jersey, and no one ever saw a vine with roots much deeper than the foot of the cutting. On the other hand, I have Grape-vines, grown from seed, with roots penetrating straight downward six or eight feet.

The occasional failure of grafted trees may be explained by this fundamental defect in their root-system. The grafts have been worked upon root-cuttings or root-sprouts. There is no reason why a graft properly founded upon a seedling stock should not be as vital and durable as if the entire tree had grown from the seed.

To have a naturally durable orchard, plant the seed where the tree is to stand and graft it there.

Vineland, N. J. *A. W. Pearson.*

Impressions of Leaves.

To the Editor of GARDEN AND FOREST:

Sir,—Many years ago, after seeing some rather indifferent impressions of leaves, taken by means of a pad saturated with coloring matter, it occurred to me to try what could be done in the same line with common printers' ink. The result proved to be much better than was expected. Where the leaf was not too rigid, and had a tolerably flat surface, the impression was not only distinct in outline and venation, but showed the peculiarities of the surfaces of the different Oak-leaves, for example, so clearly that it was quite as easy to distinguish the species from the prints as from the leaves themselves.

Not only could ordinary leaves, like those of the Oaks and Maples, be printed in this way, but many very delicate Ferns, with a little care, were beautifully delineated, as will be seen by the samples I send you. The Oak-leaves were printed some thirty years ago, and the Ferns about twelve years later.

The process was very simple, and I will give it, as it may be both interesting and useful to some of the younger readers of GARDEN AND FOREST, should they be inclined to try it. They will have an enduring reproduction from actual life, which is always ready to be used for study or comparison.

With a small round dabber, like an old-fashioned pincushion, made by stuffing cotton in the hand part of an old glove, the ink is tapped on the side of the leaf to be printed. To apply it evenly the ink should be rubbed with the dabber smoothly over the surface of a plate or flat piece of glass. When every part of the leaf has been inked it is laid on the paper and the two pressed together by placing them in a magazine or letter-book, and using an ordinary copying-press or any other means of applying a strong even pressure.

Where the leaf is firm, as in the Oaks and Maples, the same leaf may be used several times in succession, and often with the result of obtaining a better impression, and if desired several leaves may be printed on the same sheet at one time.

Santa Barbara, Cal. *Hugh D. Vail.*

[The impressions which accompanied this letter are beautifully distinct and uniform. They were taken on heavy smooth-surfaced writing paper.—ED.]

Recent Publications.

The Rescue of an Old Place. By Mary Caroline Robbins. Houghton, Mifflin & Company, Boston and New York. 1892.

To most readers of GARDEN AND FOREST this book will need neither introduction nor recommendation, for it is practically a reprint of the series of articles which, under the title "How We Renewed an Old Place," appeared in these columns during the past year and achieved a conspicuous success.

We are tempted, however, to speak somewhat at length of the volume for the benefit of new subscribers and to refresh the memory of older ones, for even those who are familiar with its contents should be reminded that a good piece of work appears to better advantage in book-form than when scattered through the columns of a periodical. Moreover, Mrs. Robbins' chapters have a practical as well as a literary value, and they will be more easily referred to when collected into this pretty little book.

A very pretty little book it is, with a simple but artistic cover of gray muslin printed in silver, and with good paper, attractive type and generous margins, which give room for a useful running index of the contents. Mrs. Robbins has now prefaced each chapter with selections from poets, old and new, and they are chosen with so much taste and feeling that, as we pass from chapter to chapter, they put us in just the right mood for the pages which are next to come. One of these quotations, by the way, we cannot refrain from reproducing, for it gives an interesting proof of the analogy in mood and even in expression which may exist between poets very widely separated in time and nationality. This stanza runs:

> All the fields which thou dost see,
> All the plants belong to thee;
> All that summer hours produce,
> Fertile made with early juice.
> Man for thee doth sow and plow,
> Farmer he, and landlord thou!

Does it not sound like a veritable bit of Emerson? But it was written by one Anacreon, whom we are apt to think of as a very different sort of person. There is only one feature in the make-up of the volume which might be criticised. In a journal like this, specially devoted to plants and their uses, or in a scientific work of which they are the subject, it is fitting that even their common names should be printed with capital letters. But it is open to question whether this somewhat technical precedent should have been followed when the essays, with their distinctive literary as well as technical value, are cast into book-form for general readers.

We shall not dwell upon the practical value of Mrs. Robbins' record of her successes and failures as a designer and gardener, since this will be quickly discovered by all who feel the need of help or sympathy in similar labors. It is even pleasanter to speak of the literary charm of the book, which seems to us not only high in character, but individual in kind.

Our readers have often been told that delightful writing about nature seems the birthright of New Englanders, and have often had their attention called to one book or another which treats of wild nature in some peculiarly attractive way. On the other hand, we are familiar also with books entitled to rank as literature which recite in a gently humorous manner the trials and triumphs of the amateur gardener—books, among which Mr. Warner's *My Summer in a Garden* holds a leading place. But in Mrs. Robbins' book we find an intermingling of many different moods, a constant change from one point of view to another, a condensation of all the varied experiences and emotions that long, busy, and yet contemplative summers and winters in the country can bring, which, we think, gives it a distinct and most attractive individuality. Her observations are not confined to the acres of the old place there. They extend over the beautiful landscapes which lie around them, and include the whole realm of nature, as it has come before her eyes and impressed itself upon her memory. Man's aims and their results are her nominal theme; but the works of God as a whole, and their influence upon the human soul, is the subject which really occupies her. And it is as surprising as it is delightful to see how she weaves the personal and the general, the practical, the æsthetic and the poetic into the woof of her chapters, so that a discordant note is never felt, and the picture left upon our minds of that corner of the world which she inhabits is as broad in general effect as it is distinct in detail, while the central figures, herself and the companion whose presence we always feel, soon become well-known and pleasant friends. Of course, mere literary skill would not accomplish so much as this. Behind the graceful mastery of word and phrase there lies a sensitive eye, a keen and cultivated mind, a spirit that responds to every poetic suggestion in books or nature, and a sense of humor much more quick and hearty than is often combined with these other qualities. The greatest charm of the book, we have said, is its variety, woven into a harmonious whole. And this variety exhibits itself not only in the themes touched upon, but in the moods through which they are viewed. One never knows in turning a page whether the next sentence will be prettily poetic or instinct with a true sentiment that never degenerates into sentimentality, or whether it will make us laugh instead of smile. The contrast between such a chapter as the one in which are chronicled the web-worm and his devastations and the one entitled "Suggestions of the Waning Year" is very great, and yet it is contrast merely, not discord; and this is due to the fact that the author seems less to change from one mood to another than to dwell in many almost simultaneously, as finely susceptible minds are able to do. Her most humorous passages are restrained by an underlying seriousness of feeling, and her most reflective ones are enlivened by flashes of humor.

Of course, writing of this sort cannot be described in writing of another sort, and even lavish quotations would not do it justice. We can only say, therefore, that while the *Rescue of an Old Place* will be found useful reading by many persons, it will be found very delightful reading by all who, whether they have acres of their own or not, can sympathize with the expe-

riences of an intelligent and susceptible mind in the presence of nature, or can enjoy really good and graceful writing upon any subject. And the true lover of nature and books will be glad to put this new-comer upon his favorite shelf, whether its row of big volumes and small begins with Evelyn or only with Thoreau.

Notes.

The Spice-bush is already brightening the brook-sides near this city with its abundant yellow flowers.

The best varieties of Sweet Corn are comparatively late. It is well, however, to plant a little of the hardier kinds for extra early use, but we have not yet tried any of these varieties which are satisfactory as to quality.

The Peabody Museum of Archæology announces that the Serpent Mound Park, in Ohio, established to preserve the most interesting of our prehistoric relics from destruction, has been completed, and that the discriminate cutting of timber from parts of the land, together with the sale of the hay-crop, will assist in defraying the expenses of its maintenance.

At the late Philadelphia flower-show some specimens of Ficus elastica, which were exhibited by Mr. W. K. Harris, attracted much attention from their bushy habit. Usually, this plant is grown with a single stem, but Mr. Harris' plants branched out at different points along the central stem, so as to present a tree-like appearance. Ordinarily, this branching habit is brought about by cutting off the main stem, but in these plants the branches seem to have been forced out by some cultural device.

The last number of *Meehans' Monthly* has a word of praise for our native Bird's Foot Violet (Viola pedata), which is spoken of as one of the handsomest of the family for garden purposes. Not only does it thrive well in borders, but it seems capable of furnishing a great number of beautiful forms, as it grows wild in different colors—white, rose-color and the like. There seems to be no reason why, with some care and selection, it might not furnish as many varieties as the Pansy has. Among some of these Violets, indeed, there are forms now which have a striking resemblance to Pansies with their two upper petals dark crimson and the three lower ones of a violet-blue.

Rev. G. H. Engleheart writes in a recent number of the *Gardeners' Magazine* of Iris Bakeriana, that it flowers almost as early as Crocus Imperati and about the same time that the most beautiful of the Grape Hyacinths (Muscari azureum) appears. It is somewhat expensive, but an excellent example of the paradox that high-priced goods are often the cheapest. Two years ago Mr. Engleheart invested three shillings and sixpence in a not very promising-looking bulb of Iris Bakeriana in a tiny thumb-pot. This was turned out into his border, and the next February it gave him one fine flower, which the year after increased to seven, each flower representing a bulb, and now, in its third season, it has formed a fine clump.

Mr. Theodore L. Mead writes to the *Florida Agriculturist* that at his place in Orange County, Florida, Dendrobium nobile has proved practically hardy. Some plants on the trunk of a Palmetto have been out three winters and have endured a temperature of twenty-five degrees several times, and once still lower, with very little injury. Sharp frost in January of this year cut off one half-grown shoot, but did not injure another alongside of it, nor did it hurt the old pseudo-bulbs or young flower-buds just opening. This frost cut down large Guava-bushes to the ground, and many of the tenderer Phœnixes lost all their leaves. Besides the Dendrobiums on the Palmetto, he has others in the woods, both on the ground and on tree-trunks, and these were untouched.

At a meeting of the fruit-growers of Ontario two apples were exhibited which were the result of a careful cross-fertilization by Mr. P. C. Dempsey, between the Golden Russet and the Northern Spy. The first of these, No. 90, was specially commended by the Fruit Committee for appearance, solidity, flavor and keeping quality. It seems an almost perfect apple for export, not too large, of a clear dark-red color, such as the foreign market demands, and its very solid flesh enables it to be packed firmly and carried well. The apple, No. 87, is rather later, and does not reach its best quality till after New Year's. It is larger, and quite as well colored and beautiful. Both of these apples have very small cores. The fact that they are not chance seedlings, but have been produced by careful selection from parents of known qualities, is certainly an encouragement for those who are devoting themselves in a studious way to the production of new fruits by careful breeding.

"Experiments by Herr Regel," says a recent article in the *Popular Science Monthly*, "with reference to the influence of external factors on the odors of plants, show that the most important is the indirect influence of light on the formation of etheric oils and their evaporation. Heat and light intensify the fragrance of strongly fragrant flowers, which in darkness is lessened without quite disappearing. When the whole plant was darkened those buds only which before were fairly well developed yielded fragrant flowers; the others were scentless. If, however, only the flowers were darkened, all were fragrant. Other plants open their flowers and are fragrant only by night. When these plants were kept continuously in the dark they lost their scent as they lost their starch. When brought into the light again both starch and fragrance returned. Besides light, respiration has a decided influence on the fragrance. In general, the opening of flowers coincides with their fragrance, but there is no necessary connection between these phenomena."

From some experiments with nitrogenous fertilizers on pasture-fields made at the Storrs School Experiment Station, in Connecticut, it appears that fertilizers containing potash or phosphoric acid alone are less effective for grass than if they have some available nitrogen in addition. The grasses, such as Timothy, Red Top and the like, must be classed as "nitrogen consumers," while Clover and the legumes are now called "nitrogen gatherers," since it seems to be accepted that in some way they gather nitrogen from the air. It would seem desirable, therefore, that fertilizers for pasture, grass-lands and lawns should contain a considerable quantity of nitrogen in a readily available form. Such fertilizers not only increase the total yield of grass, but they also increase the percentage of protein in the crop. Since it is protein which makes blood, bone, muscle and milk, and as this is the most important and costly ingredient in food and apt also to be deficient in feeding-stuffs, the increase of this substance is a matter worthy of consideration and a strong additional argument for the use of nitrogenous fertilizers.

F. R. Pierson writes to the *American Florist* that Bermuda Easter Lilies are often left too long after they are ready to be cut. The proper plan is to cut the flowers as soon as they are sufficiently open to allow the pollen to be removed, to put them in water and set them away in a dark cellar. The flowers will then never become transparent or papery, but have the desirable waxen appearance which gives them their highest value. Of course, this refers principally to the smaller-sized Lilies grown for cutting, on which there are from two to four flowers on a stem. It will be found that when the first Lilies begin to open on the stem, if they are cut and treated in this way, the remaining buds will open even better in the water than they will if they remain in the greenhouse, while the first flowers will keep in better condition than if they had remained in the heat and sunshine until the other flowers had opened. Potted plants should also be placed in a darkened greenhouse, a cool shed or a cellar when their flowers are opening. For transportation the flowers should be packed with a little cotton as tightly as possible, and they should be absolutely dry, because the least moisture will discolor them. Lilies properly cut can be kept for a fortnight without injury if they are in a place where there is no condensation of moisture. When they show any sign of flabbiness they should be removed from the jars and the stems freshly cut, and they will shortly be as good as ever. On arrival at their destination, after a long shipment, they should have their stems cut and be placed in water in a dark cellar for half a day before using, and they will be greatly improved.

Catalogues Received.

B. A. Elliott & Co., 54 Sixth Street, Pittsburgh, Pa.; Seeds, Trees, Shrubs and Small Fruits. "A Few Flowers Worthy of General Culture," an Illustrated Treatise on the Practical Advantages of Hardy Flowers as Garden Plants, with Price-catalogue.—Jessamine Gardens, Jessamine, Florida; Rare Florida Flowers and Fruits, Ornamental Plants.—John Laing & Sons, The Nurseries, Forest Hill, London, S. E.; Special Clivia List.—John A. Scollay, 74, 76 Myrtle Avenue, Brooklyn, N. Y.; Horticultural Building and Hot Water Engineering.—John C. Teas, Carthage, Mo.; Shade and Ornamental Trees, Evergreens, Fruit Trees, Grapes and Small Fruits.—The Tottenham Nurseries, Ld., Dedemsvaart, near Zwolle, Netherlands; Wholesale Trade-list of Conifers, Rhododendrons, Azaleas, Roses, Fruit Trees, Perennials, etc.—Vilmorin Andrieux et Cie, Paris, France; Seeds of Trees, Shrubs and Greenhouse Plants.